AMP2-DA/AVU and AMP2-DA/APP

2U Digital Audio Speaker Monitor

With Two Selectable AES Inputs on BNC,
Two Analog Inputs on XLR, Two Selected
Analog Stereo Outputs on XLR, Two Mechanical
VU (AVU) or PPM (APP) Level Meters,
and Phase Indication

Document P/N **821584** Rev-**A**

User Manual

CONTENTS

Title and Contents 1
Introduction 2
Section 1: Features, Specs, and Installation 3
Description and Features 4
Applications and Specifications 5
Installation 6
Section 2: Operation 7
Front Panel Features 8
Rear Panel Features 12
Audio Amplifier and Speaker Configuration 16
Balance Control Characteristics 16
Section 3: Technical Information 17
General Technical Observations 18
AES to Analog Converter PCB (919117) 19
AES Mute-On-Error Jumper Location (919117 PCB) 20
PPM Meter Specifications and Level Threshold Settings 21
VU Meter Specifications and Level Threshold Adjustment..... 21
AMP2-DA/AVU and AMP2-DA/APP Interconnect Block Diagram 22

Important Safety Instructions

1) Read these instructions.
2) Keep these instructions.
3) Heed all warnings.
4) Follow all instructions.
5) Do not use this apparatus near water.
6) Clean only with dry cloth.
7) Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8) Do not install near any heat source such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9) Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10) Protect the power cord from being walked on or pinched, particularly at plugs convenience receptacles and the point where they exit from the apparatus.
11) Only use attachments/accessories specified by the manufacturer.
12) Use only with the cart stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13) Unplug this apparatus during lightning storms or when unused for long periods of time.
14) Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as when power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15) Do not expose this apparatus to rain or moisture.
16) The apparatus shall be connected to a mains socket outlet with a protective earthing connection.

CAUTION!

In products featuring an audio amplifier and speakers, the surface at the side of the unit, where the audio amplifier heat sink is internally attached, may get very hot after extended operation. When operating the unit excercise caution when touching this surface and ensure that external materials which may be adversely affected by heat are not in contact with it. There is a Hot Surface label (see diagram) attached to the aforementioned surface of the product.

Introduction

Congratulations on your selection of a Wohler Technologies product. We are confident it represents the best performance and value available, and we guarantee your satisfaction with it.

If you have questions or comments you may contact us at:

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Section 1

Features, Specs, and Installation

Description

Features

Applications

Specifications

Installation

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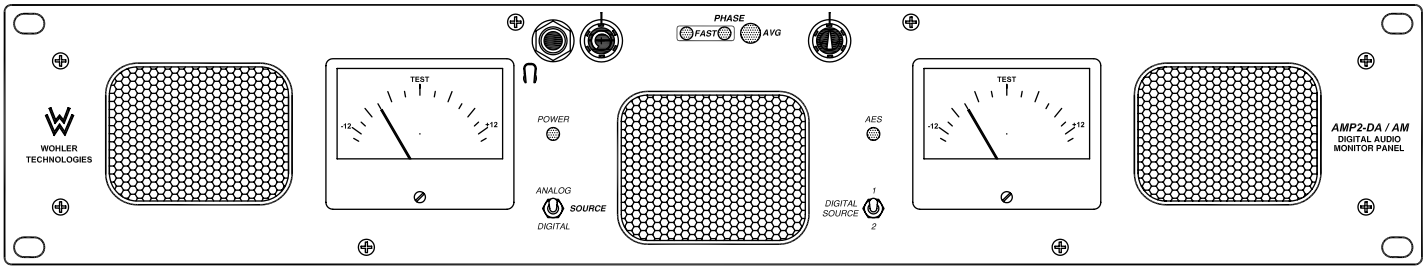
AMP2-DA/AVU
and
AMP2-DA/APP
Powered Audio Monitors



AMP2-DA/APP Series Front Panel

Description

The **AMP2-DA/AVU** and **AMP2-DA/APP** are monitors capable of audibly monitoring two source channels through a stereo speaker system while simultaneously visually monitoring the two channels on two high quality mechanical audio level meters. The **AMP2-DA/AVU** model features mechanical meters with **VU** ballistic characteristics and the **AMP2-DA/APP** model features these meters with **PPM** ballistic characteristics.

Either digital AES or analog audio signal sources may be selected for monitoring via a front panel toggle switch. The user may also select between two AES inputs on the rear panel with a front panel toggle switch. AES signal status is indicated by a bi-color (red/green) LED. Wohler Technologies proprietary three-LED stereo phase indication feature allows visual monitoring of phase relationships of the signals assigned to the left and right speaker channels. Other features include volume and balance controls, power indication LED, and headphone output.

The rear panel for these monitors include two selectable AES inputs on BNC connectors (standard), two analog inputs on female XLR connectors, and a stereo analog output of the left and right speaker channels on two balanced male XLR connectors. Optional balanced XLR connectors, instead of unbalanced BNC connectors, may be specified for the AES inputs at the time of order.

All **AMP2 Series** units contain three audiophile-quality drivers and three power amplifiers; two amplifiers (and two speakers) that reproduce midrange and high frequency information in stereo, and a third amp/driver combination (and speaker) that handles summed Low Frequency (LF) information below the 500 Hz crossover point. The unique audio design of these monitors has two important advantages. First, it provides optimally focused sound in an Ultra Near Field ™ (1 to 3 feet) environment. This allows higher SPL for the operator while reducing overall ambient sound and adjacent bay crosstalk. Second, electronic rather than acoustic cancellation of bass frequencies provides positive audible detection of reversed polarity ("out of phase") audio feeds. Output limiter circuits are incorporated to protect the speakers, and extensive magnetic shielding allows placement immediately adjacent to video monitors with no color impurities.

Features

- 104 dB SPL at two feet
- Only two rack spaces high
- Excellent high frequency response for positive detection of background whine and noise
- Audible and visual indication of phase/polarity problems
- Thorough magnetic shielding for placement next to video monitors
- Choice of either VU or PPM high quality mechanical level meters
- Two selectable AES/EBU inputs on unbalanced BNC connectors
- Two analog inputs on balanced XLR connectors
- Stereo analog output of the channels monitored by the left and right speakers on two balanced XLR connectors
- Select AES or analog input source via a front panel toggle switch
- Select one of two AES input sources via a front panel toggle switch
- AES signal status/error indication LED
- Headphone output
- Power indication LED

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Applications

The **AMP2-DA/AVU** and **AMP2-DA/APP** are ideally suited for use in VTR bays, mobile production vehicles, teleconferencing installations, multimedia systems, satellite links and cable TV facilities, and on-air radio studios. Designed and manufactured in the U.S., both models are backed by a strong warranty and a satisfaction guaranteed return policy.

General Specifications

Input Connectors:	**AES**: BNC*, **Analog**: XLR
Analog Input Impedance: **Digital Input Impedance:**	**XLR**: 70K Ω, balanced **BNC**: 75 Ω, unbalanced
Peak Acoustic Out (@ 2 ft.):	104 dB SPL
Power Output, **RMS Each Side (4Ω):** **RMS Bass (4Ω):**	 14 W transient / 10 W continuous 35 W transient / 25 W continuous
Frequency Response, **Sixth Octave:**	80 Hz - 16 kHz ± 5 dB) (-10 dB @ 40 Hz, 20 kHZ)
Input Level for Maximum Output (Volume Full On):	0 dBv balanced / -10 dB unbalanced
Hum and Noise (analog):	Better than -68 dB below full output
Distortion, Electrical:	Less than 0.15% at any level below input threshold
Distortion, Acoustic:	6% or less at worst case frequencies above 120 Hz, including cabinet resonance; typically less than 1.5%
Input Overload:	+26 dBv balanced
Converted Analog Out S/N:	>90 dB
Converted Analog Out THD:	<0.008%
Magnetic Shielding:	<0.8 Gauss any adjacent surface
Power Consumption **(Average Maximum):**	 45 W
AC Mains Input:	100-240VAC, 50-60 Hz Universal

Digital AES Specifications

AES termination:	75Ω (ohm) removable, unbalanced
AES sampling rate:	32-48 kHz, auto-select
D to A converter:	18-bit low jitter
D to A gain calibration, **(dB = dBFS):**	DIP switch selectable; 0 = -18, +6 = -9, +4 = -20, +8 = -20

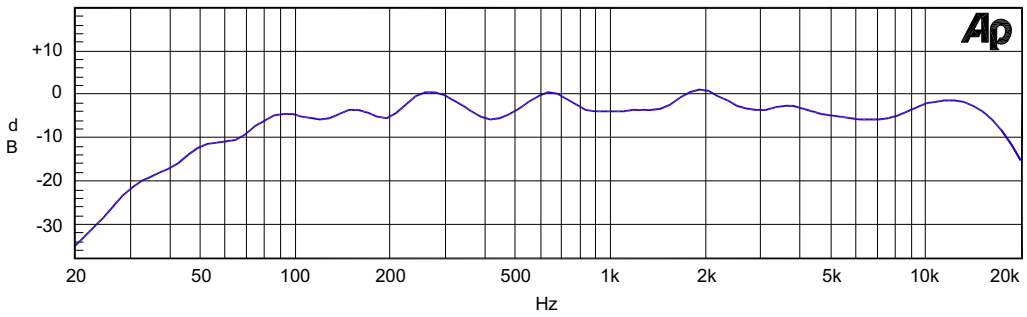
Physical Specifications

Weight:	18 lbs. (8.2 kg)
Dimensions (HxWxD):	3.5 x 19 x 12 inches (89 x 483 x 305 mm)

* Optional XLR connectors (instead of BNC) may be specified for the AES inputs at the time of order.

Note: See page **21** for level meter specifications.

Audio Response Curve



Typical 1/6 Octave Audio Response Curve

Units are designed to meet, at time of manufacture, all currently applicable product safety and EMC requirements, such as those of CE. 0 dbV ref. 0.775V RMS. Features and specifications subject to improvement without notice.

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Installation

Mounting

The unit should be mounted where convenient for operating persons, ideally at approximately ear/eye level for best high frequency response and visual observation of the level meters. Its superior magnetic shielding eliminates concerns about locating it adjacent to most types of CRT monitors, including even high-resolution color monitors.

Heat Dissipation

Heat dissipated by the speaker amps is conducted directly to the left side of the chassis; no special considerations for cooling are necessary as long as the ambient temperature inside the rack area does not exceed approximately 40°C (104°F).

Sympathetic Vibration

Sympathetic vibration from other equipment (cables, etc.,) in the rack may be serious enough to interfere with the unit's sound quality out in the listening area. The use of thin card stock and/or felt or foam weather-stripping type materials between adjacent vibrating surfaces, or tying up loose cables, etc., may be required to stop vibrations external to the unit.

Mechanical Bracing

Even though the unit is fairly heavy, the chassis is securely attached to the front panel at eight points along its surface, not just at the four corners of the chassis ears. This feature will reduce or eliminate rear bracing requirements in many mobile/portable applications. The weight of internal components is distributed fairly evenly around the unit.

Audio Connections

Connection of the audio feeds is straightforward. Please refer to the system interconnect block diagram on page **22** for clarification of the general signal paths into and out of the unit.

AES/EBU digital inputs are via female BNC connectors and are configured for 75 Ω unbalanced connections. Analog inputs are via two 3-pin female XLR connectors and are configured for 70K Ω balanced connections. Care should be exercised to avoid mismatched cable types and other similar causes of undesired reflections in RF signal systems. If severe enough, such reflections can result in corruption of the digital datastream.

AC Power

The unit's AC mains connection is via a standard IEC inlet, with safety ground connected directly to the unit's chassis. The universal AC input (100-240VAC, 50/60Hz) switching power supply is a self-resetting sealed type, with automatic over-voltage and over-current shutdown. There is no user-replaceable fuse in either the primary or secondary circuit.

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Section 2

Operation

Front Panel Features

Rear Panel Features

Audio Amplifier and Speaker Configuration

Balance Control Characteristics

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Front Panel Features

Please refer to **Figure-2a** on the facing page to familiarize yourself with the front panel features of the **AMP2-DA/AVU** and **AMP2-DA/APP** units. The following sections describe these features and are referenced, by number, to **Figure-2a**.

1 Speakers

The monitor features two mid-range speakers (left and right) and *one* woofer speaker. Two amplifier/driver combinations handle midrange and high frequency information in the left and right (stereo) speaker channels, while the third channel reproduces and sums the left and right channel information below the 500 Hz crossover point in the woofer (bass) speaker(s). Note that the woofer channel is NOT a dedicated **LFE** (subwoofer) or **Center** channel. See page **16** for more information concerning the **AMP2 Series** audio amplifier/speaker configuration.

2 Audio Level Meters - Mechanical

Audio levels for the left and right sources selected for monitoring are respectively displayed in the left and right mechanical level meters. The **AMP2-DA/AVU** model uses meters exhibiting **VU** ballistic characteristics. The **AMP2-DA/APP** model uses meters exhibiting **PPM** ballistic characteristics. See page **21** for **Threshold Level** adjustment and settings for the **VU** and **PPM** type of meter.

3 Analog/Digital Source Select Switch

This two position toggle switch allows the operator to choose between two primary input sources; **ANALOG** or **DIGITAL**

- **ANALOG** = Unit will monitor the **analog** signals as input on the rear panel **ANALOG IN** XLR connectors (**Item F**, page **14**).
- **DIGITAL** = The unit will monitor the **AES** signals as input on the selected (**1** or **2**) rear panel **AES/EBU IN** BNC connector (**Item C**, page **12**).

4 AES Source Select Switch (1 or 2)

This two position toggle switch allows the operator to choose between the two rear panel **AES/EBU IN** digital input connectors; **1** or **2** (**Item C**, page **12**). Note that in order to monitor the selected **AES** input, the **Analog/Digital Source Select Switch** (**Item 3**) must be set to **DIGITAL**.

5 AES Status LED

This bi-color (GREEN/RED) LED indicates the status of the selected **AES** input signal (**1** or **2**) and functions regardless of whether the **analog** or **AES** inputs are selected for monitoring. LED indication is as follows:

- **GREEN** = a valid **AES/EBU** digital datastream is being received
- **RED** = there are errors in signal reception *and/or* data errors (if the data has been tagged as inappropriate for conversion to analog by having the validity bit set).

Note: The **AES Termination and Error Indication Type DIP** switch module on the rear panel (**Item B**, page **12**) is used to set this LED to indicate either reception *and* data errors or to indicate reception errors *only*.

An optional feature of the **AES** signal error detection is the ability to mute the audio when errors are detected in the **AES** signal. To enable this feature, a jumper is placed at **H12** of the **919117** PCB. See page **20** for location of **H12** on the **919117** PCB.

6 Headphone Jack

This jack accepts a standard 1/4" phone type stereo plug. Select the headphone audio sources as you would for the internal speakers. When you plug in headphones, the speakers will mute.

7 Volume Control

This controls the loudness of the audio reproduced by the internal speakers or connected headphone. Clock-wise rotation of this control increases the loudness of the monitored audio.

8 Power LED

This LED glows GREEN to indicate the unit is connected to mains power and an operation voltage is present.

(Continued)

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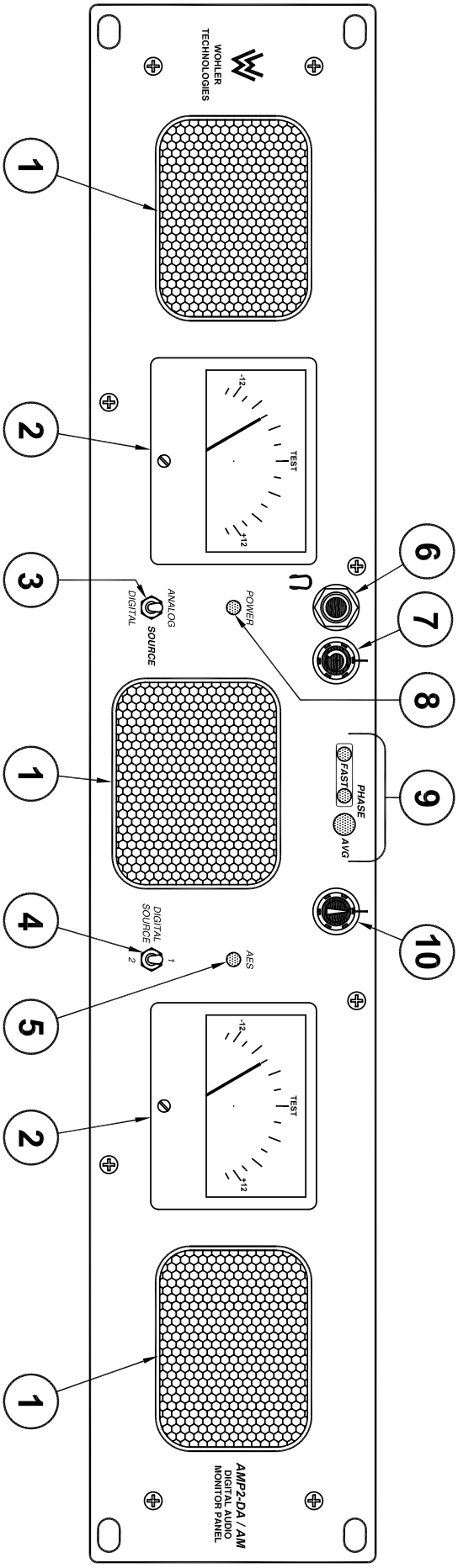

Figure-2a: Front Panel Features

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Front Panel Features

(Continued)

9 Phase Indication LEDs

These three LEDs indicate the instantaneous and average phase (polarity) conditions between the two signals in the channel pair (or downmix) assigned to the left and right speaker channels. The two smaller LEDs labeled **FAST** show *instantaneous* phase relationships in the signal. The larger LED labeled **AVG** will indicate the *average* phase condition. Indication is as follows:

- The ***left*** **FAST** LED glows (or blinks) GREEN for ***in-phase*** signals.
- The ***right*** **FAST** LED glows (or blinks) AMBER for ***out-of-phase*** signals.
- The large **AVG** LED indicates the *average* phase condition by glowing GREEN for ***in-phase*** signals, or RED for ***out-of-phase*** signals.

In general, observing the **AVG** LED alone is sufficient for proper phase monitoring. While it is normal for stereo signals to contain some intermittant instantaneous *out-of-phase* and *in-phase* conditions (**FAST** LEDs), a steady RED glow of the **AVG** LED indicates an *out-of-phase* alarm condition.

10 Balance Control

This control changes the volume balance between the left and right speaker channels. Note that this control attenuates the signal from the source, so that the left and right *bass* frequencies (summed together and reproduced in the woofer channel) will respond to balance adjustments in tandem with the left and right speaker channels. See page **16** for more information concerning the balance control characteristics.

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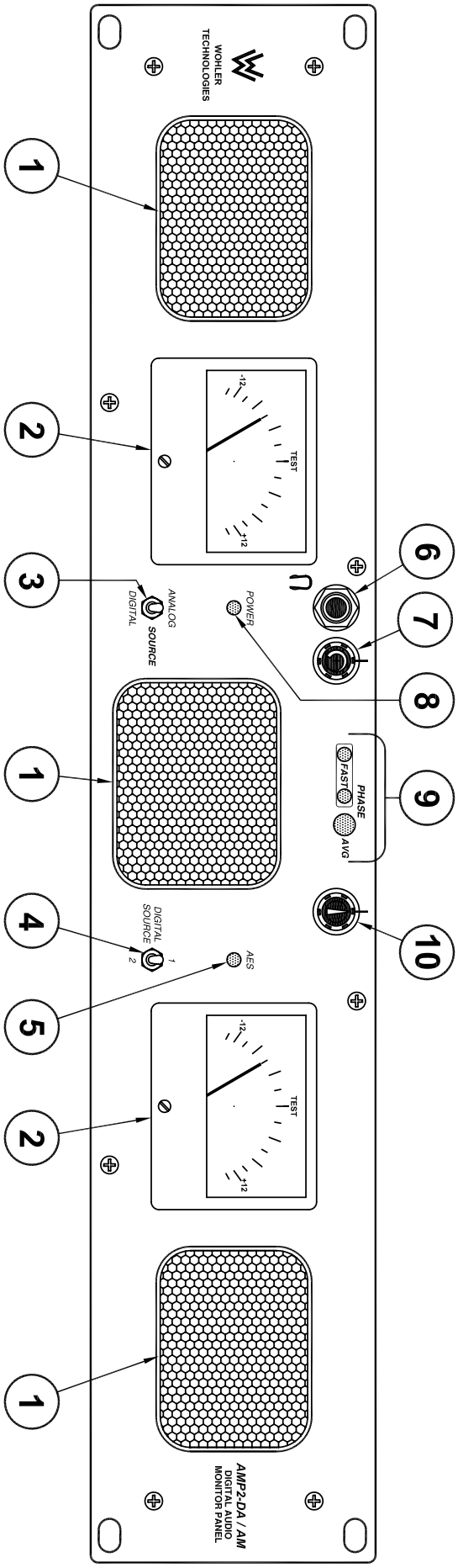

Figure-2a: Front Panel Features

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Rear Panel Features

Please refer to **Figure-2b** on the facing page to familiarize yourself with the rear panel features of the **AMP2-DA/AVU** and **AMP2-DA/APP** unit. The following sections describe these features and are referenced, by letter, to **Figure-2b**.

A Power Connector

Attach a standard IEC-320 power cord between this connector and mains power (100 - 250VAC, 50/60 Hz). The front panel **Power LED** (**Item 8**, page **8**) will glow GREEN to indicate operating voltages are present.

B AES Input Termination and Error Indication Type DIP Switch

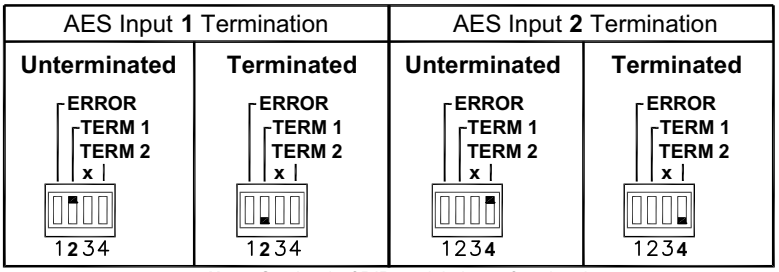
This 4-position DIP switch module is used to set the termination characteristics for the **AES** inputs and to set the error type indicated by the **AES Status LED** (**Item 5**, page **8**). **Note:** Section **3** of the DIP module is not used.

AES Input Termination:

In the event that either of the two **AES** input channels is fed to downstream equipment, the associated DIP switch section (**section 1** = **IN 1** and **section 3** = **IN 2)** must be placed in the **UP** (**Unterminated**) position. If there is *no* downstream equipment connected, then the associated DIP switch section must be placed in the **DOWN** (**Terminated**) position. See below left for a diagram of termination settings.

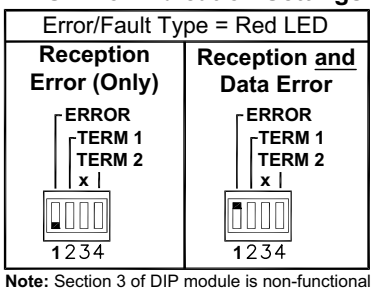
Error Indication Type:

DIP switch **section 1** may be set to allow the **AES Status LED** to indicate either reception *and* data errors or to indicate reception errors *only*. See the diagram below right for settings.



Note: Section 3 of DIP module is not functional

AES Error Indication Settings



Note: Section 3 of DIP module is non-functional

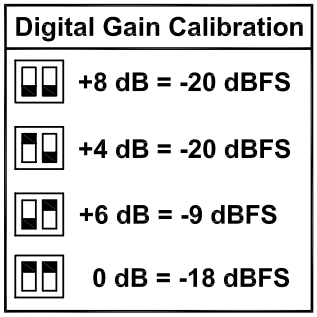
C AES Unbalanced BNC Input Connectors (IN 1 and IN 2)

These two **AES** inputs on female BNC connectors (**IN 1** and **IN 2**) are meant to receive standard **AES** signals and are configured for unbalanced, 75 Ω connections. Either of the two inputs is selected by setting the **AES Source Select Switch** (**Item 4**, page **8**) on the front panel to **1** or **2**. Note that the unit will monitor the selected **AES** source *only* when the **Analog/Digital Source Select Switch** (**Item 3**, page **8**) is set to **DIGITAL**.

Optional balanced inputs on female XLR connectors may be specified for the **AES** inputs in lieu of BNC connectors.

D AES Input Level Gain Calibration DIP Switch

Input **Level Gain Calibration**, the analog level which corresponds to a given digital input value, is settable via this DIP switch. The factory setting is +4 dB (analog) = -20 dBFS (digital). See the silk-screened chart on the rear panel or the diagram below for settings.



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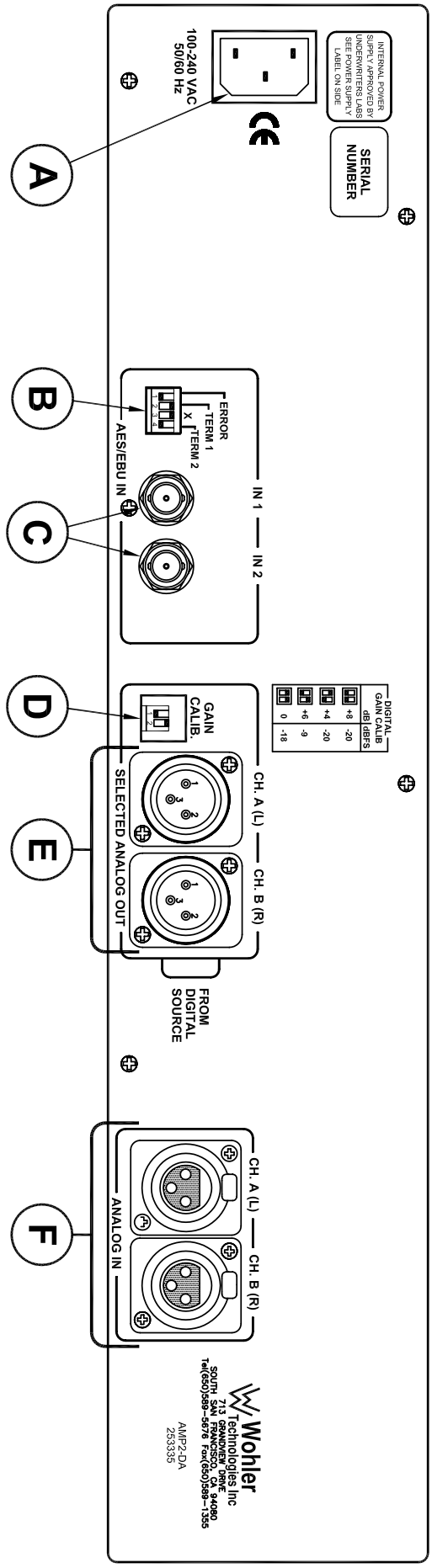

Figure-2b: Rear Panel Features

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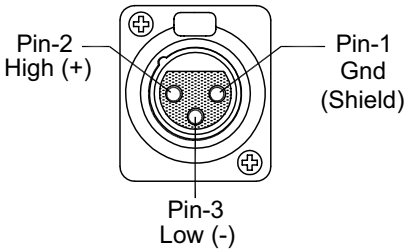
Rear Panel Features

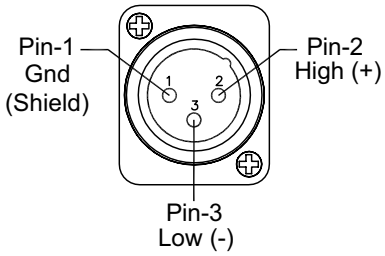
(Continued)

E Selected Analog Output Connectors

These two 3-pin male XLR connectors are **analog** outputs of the selected source as assigned to the left and right speakers. The left connector outputs the left channel (**Channel A**) and the right outputs the right channel (**Channel B**). Both connectors are configured for low impedance connections and the output signals are not affected by the volume/balance controls or headphone mute. For XLR pinout information see the diagram below.



Female XLR Pinout



Male XLR Pinout

F Analog Input Connectors (LEFT [A] and RIGHT [B])

These two 3-pin female XLR connectors (Left and Right) accept standard **analog** audio signals and are configured for balanced 70K Ω connections. For XLR connector pin-out information, see the diagram under **Item E**. Note that the **analog** inputs are monitored *only* when the **Analog/Digital Source Select Switch** (**Item 3**, page **8**) is set to **ANALOG**.

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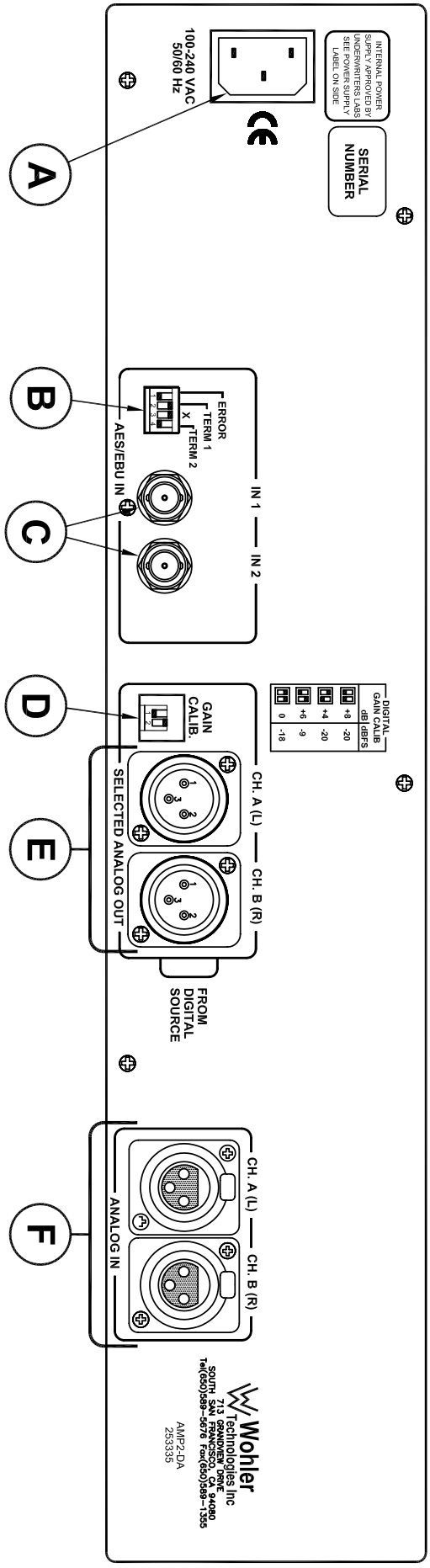

Figure-2b: Rear Panel Features

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Audio Amplifier and Speaker Configuration

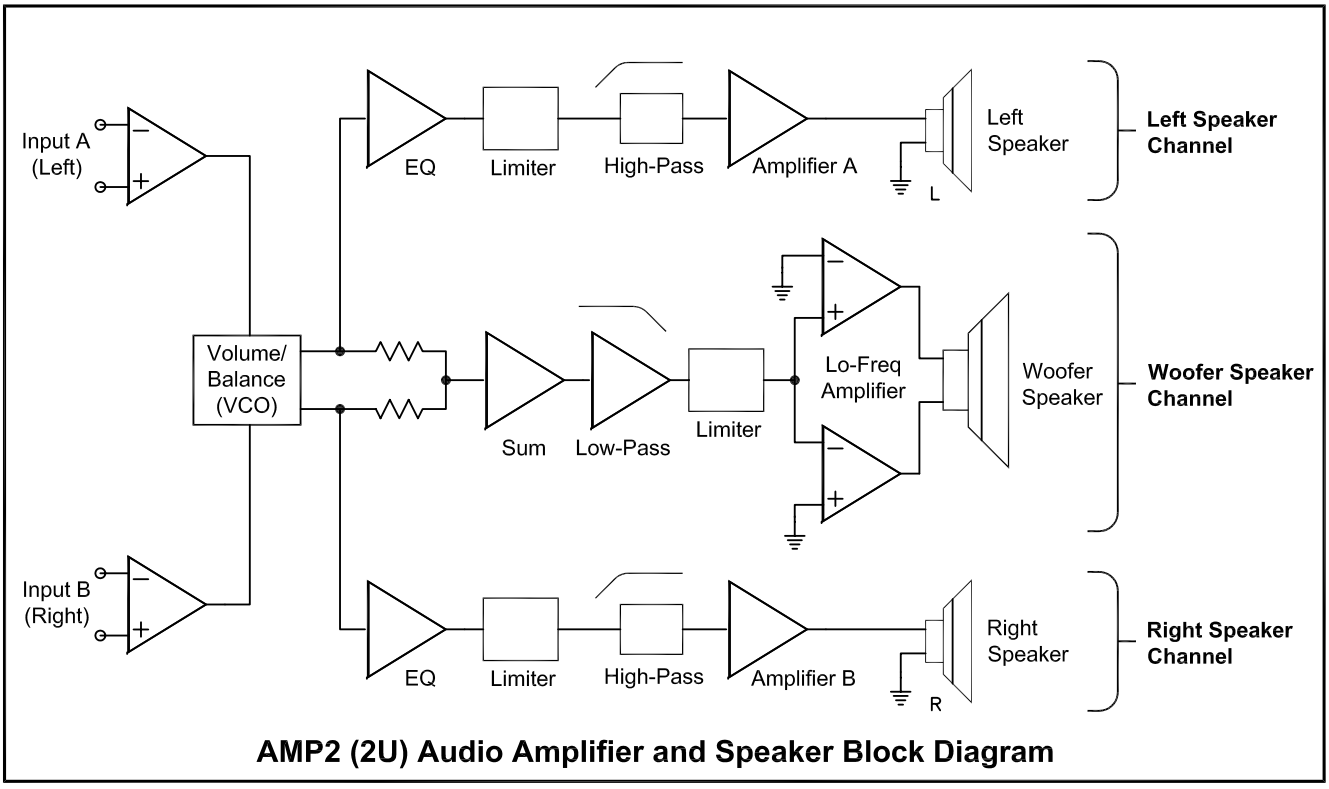
General Description

All models in the **AMP Series** contain high performance transducers (speakers) driven by three power amplifiers; two amplifier/driver combinations handle midrange and high frequency information in the left and right (stereo) speaker channels, while the third amplifier channel sums the left and right channel information *below* the 500 Hz crossover point in the woofer (bass) speaker(s). Note that the woofer channel is NOT a dedicated **LFE** (subwoofer) or **Center** channel.

Speaker Configuration

All **AMP2** (2U) products are configured with two speaker channels (left and right) to reproduce midrange and high-range audio frequencies (in stereo) and one woofer speaker channel to reproduce the summed (combined) *low-range* audio frequencies from the left and right speaker input channels.

See below for a simplified diagram of the **AMP2** audio amplifier/speaker configuration.



AMP2 (2U) Audio Amplifier and Speaker Block Diagram

Balance Control Characteristics

The balance control attenuates the signal from the source, so that the left and right bass frequencies (summed together and reproduced in the woofer channel) will also respond to the balance control.

Example:
If an audio signal of a voice speaking English is fed to the *left* (A) input and a voice speaking Spanish is fed to the *right* (B) input, then the *left* speaker channel will reproduce the midrange and high-range frequencies of the English speaking voice, the *right* speaker channel will reproduce the midrange and high-range frequencies of the Spanish speaking voice, and the *woofer* speaker channel will reproduce the summed (combined) low-range frequencies of *both* voices.

If the balance control is rotated to the *left* (English), then the Spanish speaking voice in the *right* speaker channel will diminish in volume and the Spanish speaking voice in the *woofer* speaker channel will also diminish.

Note that if the balance control is rotated completely to the left, the volume in both the left speaker channel and woofer speaker channel will increase slightly to maintain overall output level. See the simplified diagram below for placement of the balance control in the audio amplifier circuit.

The converse of the above is true if the balance control is rotated to the right.

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Section 3

Technical Information

General Technical Observations

AES to Analog Converter Module PCB (919117)

AES Mute-On-Error Jumper Location (919117)

PPM Level Meter Specifications and Level Threshold Settings

VU Level Meter Specifications and Level Threshold Adjustment

AMP2-DA/AVU and AMP2-DA/APP Interconnect Block Diagram

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General Technical Observations

General Mechanical Observations

Elimination of cabinet and component sympathetic vibrations (resonances) requires considerable attention to mechanical details. Because of this, and the physical constraints of the speaker's acoustic enclosures, even minor changes to any of the mechanical details of the unit can seriously impair its acoustic performance. This especially applies to the speaker baffles. If mechanical work on the unit is necessary, be sure to make adequate notes to permit accurate reassembly.

Unfortunately, the unusual and wholly proprietary method of magnetic shielding is usually degraded slightly by any disassembly of the unit, except removal of the rear panel. Almost any maintenance or repair will require removal of the cover. If an immediately adjacent video monitor shows magnetic interference after reassembly of the unit, it must be returned to the factory to restore the shielding completely.

General Audio Circuitry Observations

Since a single-sided power supply is used, all amplifier sections are "biased" with a 1/2 supply reference, so all opamp signal terminals on the main board should have a DC level of +12V, +/-0.7V. Signal inputs to the main audio board from any of the input select circuits are via the balanced input stage, in lieu of the XLR analog inputs on the basic unit. Signal feed points for level meters and the phase indicator are immediately after the input stage, and before the volume control section.

The signal pick-off for the headphones is after the volume and balance controls. Speaker muting is controlled by circuitry that senses connection of headphones to the jack.

The power amps are attached to an aluminum heatsink plate (which is also connected to the circuit common for these devices). The heatsink plate forms an operational module separate from the chassis, which allows access to the solder side of the circuit board while power is applied to the circuitry. To avoid thermal shutdown of the power amp(s), they should NOT be operated without their tabs being fastened to the heatsink plate.

Variations in the frequency response of different production runs of drivers has sometimes required minor adjustments in the equalization/crossover components in individual runs of units. Some of these components may have values slightly different than those indicated in the schematic, which are the nominal ones. If any of the drivers (speakers) are replaced, it may be helpful to change some of these components to achieve maximum flatness of response.

The operating threshold of the woofer limiter is critical to both satisfactory reproduction of musical transients and preventing damage to, or destruction of, the speaker itself. The side speaker output limiter circuits are similarly important, though not as critically adjusted.

The woofer power amps are arranged in a bridge configuration; care must be taken to avoid letting EITHER speaker terminal contact the chassis (common) OR THE GROUNDED LEAD OF ANY TEST EQUIPMENT so as not to short out the power amps. The side speaker outputs are single-ended, so these precautions are not necessary for them.

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AES to Analog Converter Module PCB (919117)

There are four primary and three ancillary sections comprising the **919117** PCB (AES/EBU digital to analog converter):
1) Input source selection.
2) audio data extraction.
3) Digital to analog conversion.
4) Analog buffer / output amplifiers.
5) Power suppy, Reset, and Error indication.

Input Source Selection (IC13)

Each of the two selectable signal inputs are transformer-coupled to the inputs of a one-of-two active buffer/switch (IC13). The output of this switch is applied to the receiver stage of the AES receiver/unframer.

Audio Data Extraction (IC11)

"Header" and ancillary data are removed from the recovered input datastream, yielding a datastream having only alternating left/right channel audio data, which is output on pin 26 of IC11.

Digital to Analog Conversion (IC10)

The "pure" audio datastream, along with a data clock and a channel ID (left/right) clock, are applied to a 20 bit two channel D to A converter (IC10), where the datastream is converted into left and right analog outputs.

Analog buffer (IC4) / Output Amplifiers (IC8, IC9)

Buffer/amps provide balanced left and right channel outputs as well as single ended outputs. Gain calibration, the analog level, which corresponds to a given digital value, is settable via a DIP switch. The default factory setting is 20 dB below "full code" (digital zero) to equal +4 dbu (0.775V). The other three settings possible are for -18 dBfs = 0 dBu, -20 dBfs = 0 dBu, and -20 dBfs = +8 dBu. See page 16 for DIP switch location and settings.

Power Supply

The 24V rail internal to the rest of the unit is converted to +5V for digital portions of the 919117 PCB by switching regulator IC12.

Error Indication

The AES status LED is a bicolor LED (Red/Green). It is green as long as a valid digital data strean is being received. The 8412 receiver is capable of indicating two types of error conditions: 1) Faulty data; data identified by the sending device (possibly invalid), and 2) Faulty reception; errors in reception of data or no data stream at all. A DIP switch on the rear panel (Item B, page 12) may be set to allow the **AES Status LED** to indicate reception *and* data errors or to indicate reception errors *only*.

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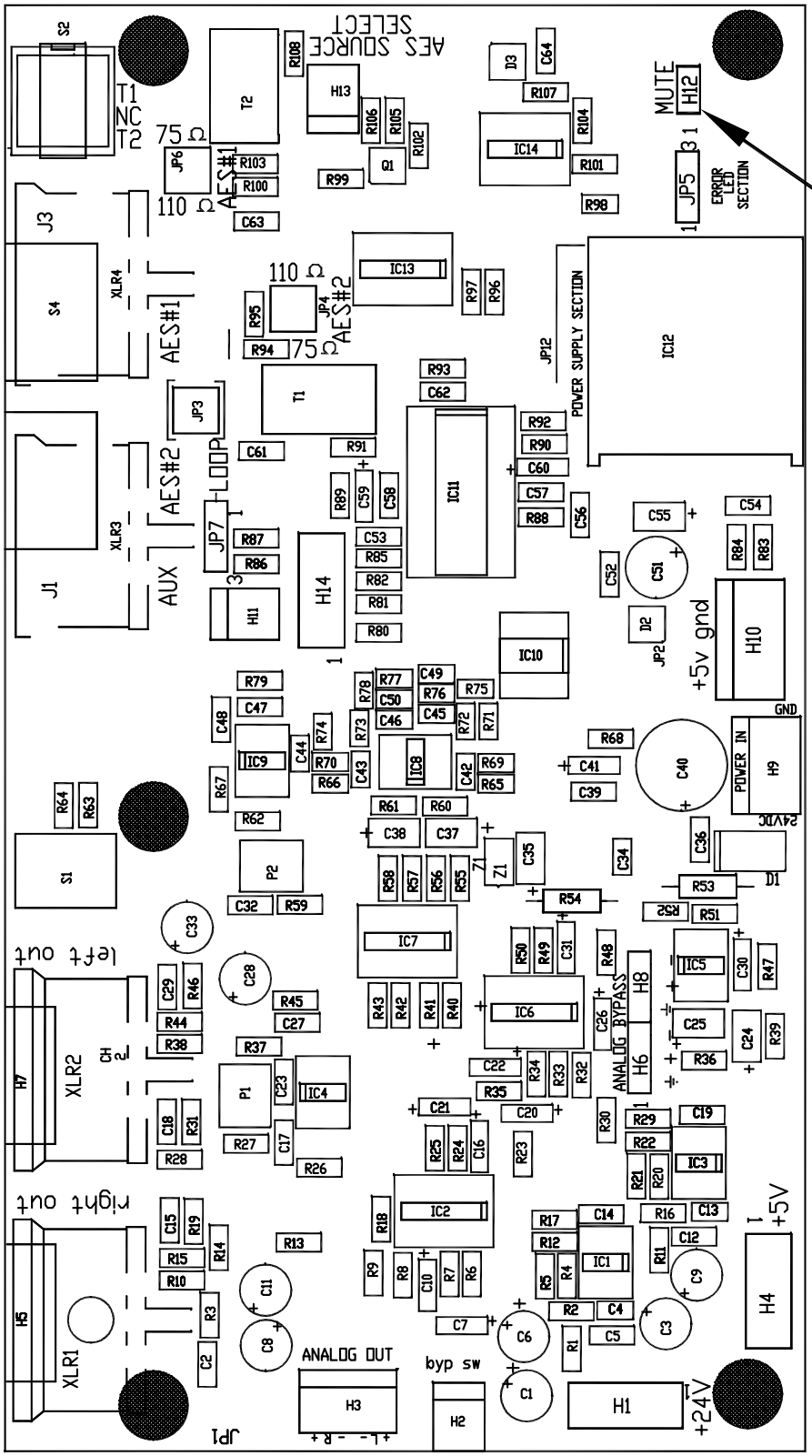
AES Mute-On-Error Jumper Location (919117)



Installing a jumper at **H12** will mute the audio if errors are detected. See **Item 5**, page **8** for more information.

AES to Analog Converter Module PCB - 919117

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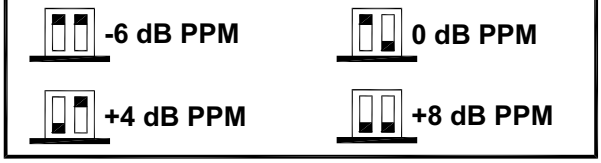
PPM Level Meter Specifications and Level Threshold Settings

The two (one per meter) **Level Threshold** DIP switches in the **APP** (PPM) unit are only accessible by removal of the top cover. Each DIP switch is physically located on the inside front panel above the level meter to which it is dedicated. Each meter can be independently set with a possibility of four settings; -6, 0, +4, or +8 dBv. Factory setting is +4 dBv. See the diagram below for DIP switch settings.

APP (PPM) Meter Driver PCB - 919028
Level Threshold DIP Switch Settings



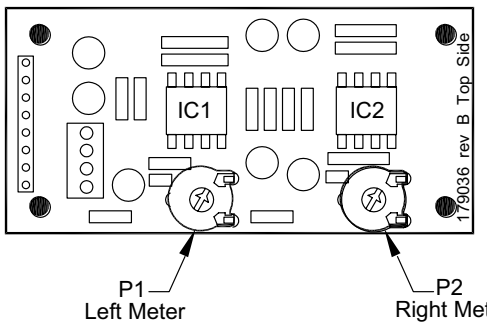
PPM Level Meter Specifications

Level Meter Type:	Mechanical
Level Meter Scale:	Specify BBC (1 to 7) or EBU type 1 and 2 (specified when ordered)
Level Meter Threshold:	-6, 0, +4, or +8 dBv: DIP switch selectable (internal)
Level Meter Dynamics:	PPM

VU Level Meter Specifications and Level Threshold Adjustment

Level Gain Calibration adjustment for the **AV** (VU) unit is done by adjusting two trim pots (**P1** and **P2**) on the level meter driver PCB (**919036V**). The units top cover must be removed to access this PCB, which is mounted in the center of the chassis bottom. **P1** adjusts the *left* meter; **P2** adjusts the *right* meter. Clockwise rotation of either meter will *increase* the level of the associated meter. Adjustment range for each meter is 0 to +8 dBv.

AVU (VU) Meter Driver PCB - 919036V



Turn pots ***clockwise*** to ***increase*** the display level threshold (sensitivity) in the associated meter

VU Level Meter Specifications

Level Meter Type:	Mechanical
Level Meter Scale:	Standard VU
Level Meter Threshold:	0 to +8 dBv (factory set to +4 dBv), trim pot adjustable (internal)
Level Meter Dynamics:	VU (full ANSI)

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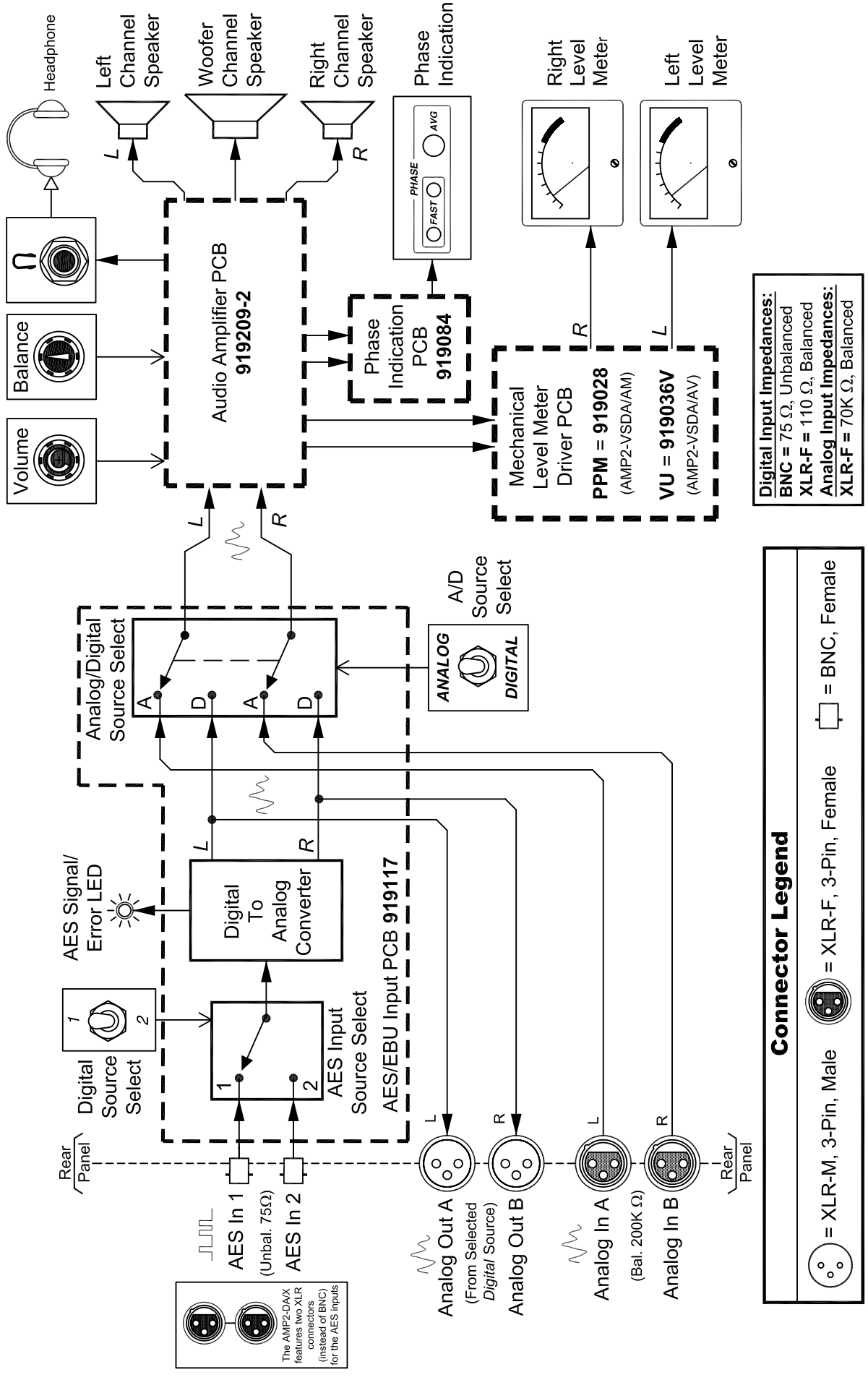
AMP2-DA/AVU and AMP2-DA/APP Interconnect Block Diagram



AMP2-DA/AVU & AMP2-DA/APP Interconnect Block Diagram (Rev-A, 08/17/04)

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NOTE:

PCB layout and schematic support documentation is available upon request.

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